State Advisory Board on Air Pollution

Subcommittee Report

Compendium of SAB Reports

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by the

State Advisory Board on Air Pollution

Compendium Work Group Members

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Executive Summary

The State Advisory Board on Air Pollution (SAB) undertakes studies related to air pollution upon the request of the Virginia State Air Pollution Control Board (SAPCB). The SAB may work on two or three projects during a given year and generally is asked to prepare and submit a report of their findings and recommendations to the SAPCB during its regular Fall Board meeting.

We focused on locating and reviewing reports prepared during the past five years. These reports contain a wide variety of useful information and findings which we recommend to be archived for future reference.

The primary recommendation of this work group is that the DEQ establish a publicly available webpage on the official DEQ website where SAB Reports can be archived. The SAB webpage may also be useful for describing the work of the SAB and its relationship to the SAPCB and the DEQ. This webpage would provide a useful place to advertise current SAB projects and public meeting schedules.

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Compendium of SAB Reports

I. BACKGROUND

The State Advisory Board on Air Pollution (SAB) consists of members of the public of the Commonwealth of Virginia who are appointed by the Virginia State Air Pollution Control Board to study air quality issues and to prepare reports documenting their findings and recommendations. The SAB meets early in the calendar year discuss projects for the current year. Generally, the SAB undertakes two or three specific projects each year. Subcommittees are formed as work groups for each project. The SAB will reconvene as a whole several times to discuss progress made on each project. Subcommittees may coordinate in a variety of ways, including interim meetings, conference calls and web conferencing. Each subcommittee prepares a final report and presents it to the full SAB membership for consideration. The Final Reports are then presented to the SAPCB during its Fall Quarter Meeting.

This year the SAPCB asked the SAB to review past SAB reports and to address the question of whether past reports should be archived for future reference and if so, to make recommendations as to how to accomplish this. We prepared the following mission statement for this project:

"We will identify, review and assess reports prepared by the SAB for presentation to the SAPCB during the past five years. We will summarize the findings and recommendations of each report. We will assess the value of making some or all of these reports available to the public on the DEQ website. Our report will document our findings and recommendations."

II. REVIEW OF PAST REPORTS

Nine previous SAB Reports from 2001 through 2004 were reviewed as part of this report. Our work group first attempted to confirm that the report under review was the final report presented to the SAPCB and that the report was complete. Reports found but not meeting these criteria were not reviewed for this report.

In this section we present a summary of each of these nine reports. It is intended that these brief summaries will demonstrate the range of topics studied by the SAB and the usefulness in making these reports readily available to the public.

The following reviews include two or three sections, presenting a descriptive summary of the intent of the report, its findings and conclusions and any specific recommendations offered in the report.

We have located additional reports, which we have not reviewed but which could be added to the SAB archive at a later date.

Air Quality Status, Trends and Monitoring Network Evaluation
2004 SAB Report

Summary

The purpose of this report was to summarize emission trends and ambient air quality monitoring results for criteria air pollutants in Virginia, and to predict future trends in population and vehicle-miles traveled in Virginia, and to assess the need for additional air quality monitors in Virginia.

Conclusions from Report

This report summarizes the trends in the atmospheric concentrations of the criteria air pollutants and based upon these trends it concludes that ozone and PM 2.5 will continue to be pollutants of concern into the foreseeable future.

Virginia's population is projected by the US Census Bureau to grow from 7.0 million in 2000 to 8.5 million in 2025. Electrical power generation and vehicle-miles traveled in this region containing Virginia are both projected to grow at a greater rate than population.

The findings in the 2002 report prepared for DEQ by the Air Resources Impact Work Group which addressed the need for air quality monitoring sites to be added to the existing Virginia air quality monitoring network were discussed in this report.

This report concludes by summarizing several pending (as of October 2004) Clean Air Rules under development by the Environmental Protection Agency, and three changes to the Clean Air Act that would take a multi-pollutant approach to managing air quality that were then under consideration in the Congress.

Report Recommendations

- The DEQ should continue to monitor air quality, and report the trends in these data in relation to the relevant NAAQSs and continue to report trends in annual emissions of the criteria pollutants.

- The DEQ should install and operate four additional ozone monitors in the Charlottesville area, Prince Edward County, Bristol area, and Danville area.

- The DEQ should install and operate three additional PM2.5 monitors in the Danville, Charlottesville, and Bristol areas.

- The DEQ should consider the option of using monitoring data from non-DEQ organizations as an alternative to establishing new monitoring sites.

PM 2.5 NAAQS Implementation Recommendations
2003 SAB Report

Summary

With Virginia on the verge of having to designate two areas of PM 2.5 non-attainment, this report discussed how the DEQ would do about defining the geographic boundaries of the PM 2.5 non-attainment areas. The size and extent of the non-attainment area will affect the level of corrective actions imposed. DEQ, has begun the process of collecting representative PM 2.5 ambient concentration data. Then by looking at its emission inventory data, DEQ can attempt to determine the sources of the PM 2.5. Some PM 2.5 may be transported into the non-attainment area from sources outside Virginia.

EPA guidance states that for urban areas not in compliance with PM 2.5 standards, nine factors should be considered in proposing non-attainment boundaries:

- Air quality in certain areas.
- Emissions in certain areas.
- Jurisdictional boundaries.
- Population density and commercial development.
- Traffic and commuting patterns.
- Expected growth.
- Meteorology.
- Geography/topography.
- Level of control of emission sources.

For rural areas, EPA guidance is simpler in that it suggests that one or more entire counties should be designated as non-attainment.

Conclusions from Report

The PM 2.5 work group of the State Advisory Board made no official recommendations in this report. It did suggest implications in considering possible boundaries for either a Roanoke or Bristol non-attainment area designation.

Key Concepts and Description of New Source Review Reform of 2002
2003 SAB Report

Summary

The purpose of this report was to prepare an informational guide for NSR Reform of 2002 that describes the key concepts in a clear manner so that members of the interested public, regulated facilities and regulatory staff have an overview of the application of NSR to a specific project. The key concepts addressed are: Baseline Actual Emissions; Actual-to-Projected-Actual Applicability Test; Plantwide Applicability Limitations (PALS); Clean Unit Test; Pollution Control Project (PCP) Exclusion. The report is primarily based on the preamble and the EPA regulations published in the Federal Register on December 31, 2002.

Conclusions from Report

The major NSR process is intended to be a public process. It is also a complex process containing many difficult concepts and complicated technical analyses. This report attempts to explain the recent changes to the NSR process (NSR Reform) in terms that the interested public can more easily comprehend.

Report Recommendations

- The report recommends that the DEQ make the document entitle "Key Concepts and Description of NSR Reform of 2002" available to the public. The report suggests that it be included on the DEQ's official website and that paper copies be made available upon request.

- The report recommends that the DEQ use the two detailed documents on "Clean Units" and Plantwide Applicability Limits" internally in preparation of its staff for adopting NSR Reform.

- The report recommends that the DEQ invite members of the State Advisory Board Subcommittee on NSR Reform to serve on a Technical Advisory Committee to study the implementation of NSR Reform in Virginia.

Public Participation in Permitting Processes
2003 SAB Report

Summary

The Department of Environmental Quality and the State Air Pollution Control Board tasked the State Advisory Board on Air Pollution with reviewing and making recommendations for revising current practices with regard to public participation when permitting new sources. The Public Participation Workgroup was formed in an attempt to make these recommendations with the goal of fostering a better understanding among Virginia citizens on air quality issues and the permitting of new sources in general.

The Public Participation Working Group considered options for improving public participation from the Air Resources Impact Working Group. In addition, the public participation process used in air permitting by Virginia and public participation tools in other states were reviewed to provide further recommendations. A number of non-government organizations were also asked for comments and suggestions to improve the public participation aspects of the permitting process.

Report Recommendations

Based on the review of information from these sources, the Public Participation Working Group makes a number of recommendations. The Working Group did observe that the suggested language in the templates of the public notices for various types of permits is complicated and likely difficult for the public to understand. The use of legal notices in newspapers may not be reaching the intended audiences. In addition, the Working Group believes that use of the DEQ website has the potential to be a powerful tool for communicating information to the public. To reflect this potential, the Working Group recommends several ways to better utilize the DEQ website to communicate permit activity and to provide guidance about such activity. However, because not all members of the public currently have access to and/or the knowledge of how to access and use the site, the internet cannot be the only communication tool. Finally, the past practice for DEQ to hold its informational briefings prior to public hearings concerning proposed permits has been identified as an area for potential improvement in the public participation process. DEQ has addressed this issue during the term of this working group by policy. Because of the technical nature and complexity of issues often communicated during public hearings and informational briefings, recommendations are also included to address how information is communicated to the public during these sessions.

Deposition of Nitrogenous Pollutants in the Chesapeake Bay Watershed 2002 SAB Report

Summary

This report summarizes the state of knowledge, circa mid-2002, of atmospheric deposition of nitrate to the Chesapeake Bay watershed and uses this knowledge to make numerical estimations of the contribution of various source categories both within and outside the state to the Chesapeake Bay watershed. While the Chesapeake Bay Watershed is only comprised of six states (Delaware, Maryland, New York, Pennsylvania, Virginia and West Virginia), modeling predicts that atmospheric emissions from as many as thirty-six (36) states impact the Bay, with the Bay states contributing less than one half of the total estimated loading. Based on the studies reviewed by the SAB, approximately thirty-two percent (32%) of the nitrogen loading to the Bay comes from atmospheric deposition. The majority of this contribution is attributed to nitrogen emitted to the air that is deposited on the ground within the watershed and later washed into the Bay. Virginia's contribution to nitrogen deposition is estimated to be approximately 10%, second only to Pennsylvania among the basin states. Nitrogen deposition continues to be an area of active research.

Conclusions from Report

There is a considerable body of modeling and analysis studying nitrogen deposition on the Chesapeake Bay. More studies are underway by the EPA NOAA Bay Program to assist in the complete characterization. Regulatory programs such as NOx SIP Call, tailpipe emissions controls, residential activities, are expected to reduce NOx deposition to the Chesapeake Bay watershed by over 41%.

Report Recommendations

- Track the modeling efforts of EPA/NOAA. Assign a specific DEQ staff person to the responsibility for participation in the modeling programs, tracking progress of the multi-EPA/NOAA, Maryland and Virginia programs and providing status reports to the Air Pollution Control Board.

- The DEQ should encourage EPA/NOAA to routinely reassess the effects of reductions in atmospheric deposition as control programs are put into effect and provide routine analysis and updates to the Board.

Methods of Quantifying VOCs for Air Permitting and Calculating Operating Fees - 2002 SAB Report

Summary

The purpose of this report was to evaluate alternative methods for quantifying VOCs (volatile organic compounds) and recommend which methods should be used for air permitting and for calculation of air operating fees. The work group reviewed the different methods for determining VOCs in mixtures emitted from regulated sources. They examined the rules and practices currently in place in Virginia and in other states, regarding permits and permitting fees for specific mixes of VOCs from regulated sources. They evaluated the pros and cons of different methods of quantifying VOCs in relation to PSD permitting and calculation of air operating fees for regulated sources.

Conclusions from Report

The subcommittee found that, there is a wide range of approaches to VOC testing in use by various states. VOC test results are used for a variety of purposes, namely emission fees, new source review applicability, and compliance with permit limits and control efficiencies. Most permits do not specify VOC test methodology for purposes of demonstrating compliance with VOC limits. There are inconsistencies and lack of guidance among states and EPA regions in implementation of VOC test methodology. Due to the wide range of industries and types of emissions from sources within an industry, it is technically difficult to specify any one single method (out of the many EPA approved methods) for VOC measurement.

Report Recommendations

- DEQ adopt Pennsylvania state guidance for quantifying VOCs published in that State's November 2000 Source Testing Manual. This guidance states that, if VOC emissions are unknown, results should be reported in terms of propane. If composition of gas stream is known and a single VOC constitutes more than 75% by volume of total emissions, then emissions must be reported in terms of that compound. Otherwise, emissions must be reported in terms of a department approved surrogate. If results are to be reported as VOCs, then speciation of exempted compounds is necessary.

- When one component of VOCs constitutes more than 75% of the exhaust stream and VOCs get reported as that compound, DEQ should inquire about similar industries in state to assure consistency of choosing surrogates (like Oregon did for all wood panel plants).

- All air permits get written with the VOC compliance methodology stated in the permits. This protects both the source and DEQ in compliance certifications.

BACT Clearinghouse Report
2002 SAB Report

Summary

This 2002 report provides a review of the United States Environmental Protection Agency's RACT/BACT/LAER Clearinghouse (RBLC) and establishes guidelines for updating the functionality of the Clearinghouse, in addition to considering the appropriateness and viability of a Virginia-only BACT Clearinghouse. The RBLC is a clearinghouse for air pollution control and pollution prevention technology determinations required for major new and modified sources subject to the new source review permitting requirements of the Clean Air Act.

Conclusions from Report

The report identifies problems with the functionality of the RBLC in three major problem areas: Completeness and comprehensiveness; Compliance verification; and Cost information. The report indicates that the Virginia Department of Environmental Quality's (DEQ) experience at the time had shown that the RBLC was missing about 60% of the data from the permits that had been issued nationwide, likely because permit data entry is voluntary (except for four basic items) and there is no quality assurance of the data provided. The report further indicates that data search on the RBLC was difficult and data entry was too complex and burdensome. The report reviews state-only clearinghouses developed by California and North Carolina and examines the usefulness and viability of a Virginia state BACT Clearinghouse.

Report Recommendations

- Establish a State BACT Clearinghouse that eliminates the drawbacks of the RBLC.
- Evaluate separating permitting and permit data entry functions, and define clear responsibilities and ownership of the Clearinghouse functions.
- Enter NSR Minor Permit data information in the State BACT Clearinghouse data base.
- Follow Information Technology recommendations for data transformation after extraction from the CEDS and transmitting to RBLC and State Clearinghouse.
- Evaluate and improve process of updating entered data on the RBLC.
- Extract (electronically) information usable out of RBLC, check for quality assurance, and include into the proposed Virginia BACT Clearinghouse.
- Make the State BACT Clearinghouse a part of the Governor's e-government initiative and have the data base information available and usable on the DEQ Web page.
- Seek all available sources for funding to create and maintain the State Clearinghouse.

Report on Ammonia Inventory Methodology
2001 SAB Report

Summary

In 2001 the SAB provided advice to the Virginia SAPCB and DEQ on the potential need and methodology required for calculating an inventory of air borne ammonia emissions for Virginia. The study was conducted to address the question of whether the anticipated installation of selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR) technologies used to reduce NOx emissions to nitrogen and water were significant and would require regulatory action by the SAPCB and DEQ.

The report identified a number of sources of ammonia air emissions in the Mid-Atlantic and New England using several available studies. Major sources include livestock, fertilizer application, undisturbed soil, and natural fires. Minor sources include industry, mobile sources, Publicly Owned Treatment Works and other miscellaneous sources.

Detailed assessments of ammonia slip emission concentrations were beyond the scope of the study; however, a provisional regional assessment was developed. Projected ammonia slip quantities were made corresponding to targeted NOx reductions during the "5 month ozone season". Resultant projected total ammonia slip quantities during the "5-month ozone season" were estimated to be relatively small (from 12.8% to 4.4%), compared to estimated total ammonia air emissions in Virginia from animal waste, fertilization, soil, TRI sources, refrigeration, mobile sources and Publicly Owned Treatment Works.

The report concludes that ammonia emissions from SCR process installations would not become significant regional contributors of ammonia air emissions in the next decade.

Report Recommendations

- The report recommended that a detailed emission inventory was unnecessary.

Public Information vs. CBI
2001 SAB Report

Summary

In 2001 the SAPCB prepared to address issues concerning Virginia Freedom of Information Act (VFOIA) requests for information that a company has designated as confidential business information (CBI). Current and proposed laws and regulations concerning VFOIA and CBI were reviewed. In addition, current practices of the Virginia Department of Environmental Quality regional offices involving VFOIA requests, collection of CBI during permitting and compliance evaluations and routine management of CBI records.

The report provides recommendations to facilitate the establishment of guidance criteria for the collection and management of CBI. The aim of the recommendations was to diminish any potential conflict between VFOIA requests and CBI claims.

Report Recommendations

The report makes the following recommendations:

- The VDEQ should provide notice to all companies submitting information to the Board that they may assert business confidentiality claims and those claims should provide an explanation of why the information qualifies. The notice should also provide a notice otherwise the information can be disclosed without notice.
- If a VFOIA request is made for information that may be confidential or is the subject to a claim, then DEQ should provide notice to the Company that (a) the CBI claim has been denied and that the information will be disclosed within a designated period of time or (b) that the VFOIA request has been received and the company has a specified number of days to justify a CBI claim.
- Company consent should be obtained when possible prior to disclosing sensitive information.
- The preparation of maintenance of a frequently asked questions list regarding CBI, trade secrets and VFOIA was recommended. This list should be posted on the website.
- A special task force should be convened to assess the necessary elements of a management system for protection CBI contained in DEQ files.

III. FINDINGS

SAB reports cover a wide range of topics concerning Virginia air quality. Some reports add historical perspective while others contain specific information of current relevance. Each report represents the considerable combined experience and resources of the SAB membership participating in its preparation. It also benefits from the different perspectives the SAB membership brings to the project. Some reports are highly technical and may be useful in providing for a specific current need. Others look forward to possible future issues for Virginia air quality. Taken together, we find these reports are a valuable resource that should be protected by archival means and made available for others to use in the future.

IV. RECOMMENDATIONS

Our recommendations follow the finding that the work of and the reports prepared by the SAB are useful resources to archive for future reference. We make the following specific recommendations to the Virginia SAPCB:

- We recommend that a permanent webpage for the SAB be set up on the Virginia DEQ website.
- We recommend that all historical SAB reports that can be found and validated as official SAB reports be linked to the SAB webpage.
- We recommend that all future SAB reports be added to the SAB webpage following presentation to the Virginia SAPCB.

- We recommend that the SAB webpage should be used to list the public meeting schedule and projects for the current SAB.
- We recommend that the SAB webpage should include a description of the role and function of the SAB.